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The problem was a comparative study of the means of communication toddlers use at home and in the group setting in the nursery school. One purpose of the study was to determine through observation the types of communication toddlers used at home as compared with those they used at the toddler-group situation away from home. Another purpose was to show the relationships between language patterns and such factors as age, sex, number of children in the home and ordinal position of the child studied.

The subjects were 20 children enrolled in the toddler-group of the Child Development program in the School of Home Economics of the University of North Carolina at Greensboro. The study was done during the spring semester of the school year 1968-69.

Following the collection of the data, the frequencies were totaled and the totals were calculated for each child. These totals were drawn from three types of communicative skills: comprehensible, non-comprehensible and non-vocal. The relationships between the frequencies of each type of communicative skills were presented and discussed.

Each set of total scores was analyzed by using an analysis of variance. The design was what Lindquist refered to as a "type III" analysis. With this type of analysis it

was possible to see if the means of communication differed as a function of age, of sex, and of situation. It was also possible to see if the means of communication were more complexly influenced by interactions of these factors.

Results of the study indicated that the total number of different words used by all toddlers at home was significantly higher than the number of words they used at school. It was found that girls used significantly fewer words at school than they did at home. Girls also used fewer words than did boys either at home or school. The younger toddlers used a higher number of non-comprehensible communication than did the older toddlers. It was found in examining the communication each toddler used and the number of children in the family that; there appeared to be little observable difference in families with only children and families with two children. However, there appeared to be a great difference in the one family studied with twins and an older sibling. And it was found by examining the communication each toddler used and his ordinal position in the family that; there is little observable difference in the communication between toddlers who are the first children in the family and toddlers who are the last children in the family.

A COMPARATIVE STUDY OF THE MEANS OF COMMUNICATION TODDLERS USE AT HOME AND IN THE GROUP SETTING IN THE NURSERY SCHOOL

by

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APPROVAL SHEET

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CHAPTER I

INTRODUCTION

There has been a multiplicity of experimental and observational studies of language development. They have followed trends in the study of all phases of childhood, starting with biographical material on individual children and progressing to quantitative studies done by Shirley (1933), Gesell and others (1941), Buhler and Hetzer (1935), and Piaget (1926, 1928). There have been, as well, controlled observations by McCarthy (1953), Fisher (1934), and Day (1932). Smith (1926, 1933), and Davis (1937, 1932) have yielded similar information regarding the developmental sequence in language patterns. Other studies have demonstrated relationships between language and such factors as age, sex, socio-economic status, motor skill, and intellectual ability. Still other investigators, Gesell (1928) and Spitz (1946), have taken a look at the functional aspects of language, and the relationship of language and personality adjustment.

The Purpose of the Study

The main purpose of the study was to determine, through observation, if there was a difference in communication that toddlers used at home as compared with that which they used in the play-group situation. A second purpose was to determine

if there was a difference in communication with respect to such factors as the age and sex of the toddler. A third purpose was to examine the communication used by the toddlers according to the number of children in the home and the ordinal position of the child being studied. The study was consucted in the Nursery School of the School of Home Economics at the University of North Carolina at Greensboro, during the spring semester of 1969.

Basic Assumptions

It is generally believed that children use the same size vocabulary at home and in a group situation away from home; that the size of the girls' vocabularies are the same as the boys' vocabularies; that the older toddlers more frequently use language as a tool for making their wants known than do the younger toddlers; that younger toddlers use more means of non-vocal communication than do older toddlers.

Studies have been made of nursery school age children showing these assumptions to be valid. However, no study has been made to validate them for toddler age children.

Null Hypotheses

The hypotheses of this study were: (1) the size of the vocabulary toddlers use at home will not differ from the size they use at school; (2) the number of different non-comprehensible vocalizations toddlers use at home will not differ from the number they use at school; (3) the number of

non-vocal communications toddlers use at home will not differ from the number they use at school; (4) the size of the vocabulary toddler girls use will not differ from the size toddler boys use; (5) the number of different non-comprehensible vocalizations toddler girls use will not differ from the number toddler boys use; (6) the number of different non-vocal communications toddler girls use will not differ from the number toddler boys use; (7) there will be no interaction between sex and situation with respect to size of vocabulary; (8) there will be no interaction between sex and situation with respect to non-comprehensible vocalizations; (9) there will be no interaction between sex and situation with respect to non-vocal communications; (10) the size of the vocabulary younger toddlers use will not differ from the size older toddlers use; (11) the number of non-comprehensible vocalizations younger toddlers use will not differ from the number older toddlers use; (12) the number of non-vocal communication younger toddlers use will not differ from the number older toddlers use; (13) there will be no interaction between age and situation with respect to size of vocabulary; (14) there will be no interaction between age and situation with respect to non-comprehensible vocalizations; (15) there will be no interaction between age and situation with respect to non-vocal communications; (16) there will be no interaction between age and sex with respect to size of vocabulary; (17) there will be no interaction

between age and sex with respect to non-comprehensible vocalizations; (18) there will be no interaction between age and sex with respect to non-vocal communications; (19) there will be no interaction among age, sex, and situation with respect to size of vocabulary; (20) there will be no interaction among age, sex, and situation with respect to non-comprehensible vocalizations; (21) there will be no interaction among age, sex, and situation with respect to non-vocal communications.

Definitions of Terms Used

Several terms which have specific meaning in this study are as follows:

Toddlers--Young children between the ages of thirteen months and three years of age are called toddlers.

Non-comprehensible vocalizations--All audible sounds other than understandable language, such as: cries, yells, babbling, sobs, and squeals, are non-comprehensible vocalizations.

Non-vocal communication--Physical ways of making wants known such as hitting, kicking, smiling, laughing, pushing, and gesturing are known as non-vocal communication.

Data Secured

Observations were made of the means of communication used by 20 toddlers in their homes and in the Toddler Play-Group in the Nursery School. Each child was observed by the

investigator for three thirty-minute periods in the home and six fifteen-minute periods in the play-group situation.

Organization of the Remainder of the Thesis

The statement and significance of the problem have been discussed in this chapter. Definitions have been given and the scope of the study has been presented briefly.

In Chapter II the literature and the research relating to toddlers' means of communication are discussed. Included in Chapter III are descriptions of the study group, of the procedures, and of collecting of the data. In Chapter IV the findings are presented. In the fifth and final Chapter a summary of the research, conclusions and recommendations for further research are stated.

CHAPTER II

REVIEW OF THE LITERATURE

From the studies that have been done concerning the means of communication used by children, it seems to be evident that the child's means of communication will be influenced by his intelligence, his hearing, his sight, his health and his environment. Communication is influenced a great deal by his ability to control his muscles and his coordination. It is also influenced by how well he learns to breathe and to use his speech organs-tongue, teeth, lips, gums, and larynx. His communication with others will also be influenced by his maturing rate or his tempo.

For the purpose of this research the literature which pertains to the following aspects of the problem will be examined: (1) material concerned with specialized and general vocabularies; (2) material concerned with the relation of language development to such phases of development as age, sex, thought, intelligence and handedness; (3) material concerned with the relation of language to environmental conditions; and (4) material concerned with special problems in language development.

Specialized and General Vocabularies

Several studies of observations, concerning the vocabularies of one child or of a small number of children from birth to various ages have been reported by several investigators.

Olson (1936) presented a technique for securing a quantitative statement of amount and rate of talking in young children when the qualitative analysis of vocabulary and sentence structure is not desired. With the aid of time-sampling techniques, such as a mechanical hand tally, and a time-out stop watch, data were secured on the amount and rate of talking for two groups of nursery school and kindergarten children. The combined data indicated that when speaking, children at these ages when observations made under conditions of free play have a verbal output of about 16.5 words per minute at a rate of 186 words per minute (Olson, 1936).

Jersild (1938) dealt with the development of loquacity and vocabulary in the language of preschool children of high intelligence. The subjects were 88 two-to-five year old children, enrolled in nursery schools and kindergartens. The average IQ of the subjects was 132. Jersild's findings were "...that there is a distinct decline in the rate of language gains at about three and a half years, and that scores show a higher correlation with IQ and mental age in the case of younger than in the case of older children" (Jersild, 1938, p. 269). The findings indicated that a larger proportion of

children gained substantial mastery of the skills involved in the use of the standard items of equipment long before the end of their stay in the conventional nursery school.

The beginning of language and the first spoken word were studied by Bateman (1917). The ages of the children at the time of using the first word varied from eight to 15 months. Bateman traced the development of vocabulary from the twenty-eighth to the thirty-sixth month for one child and through the first year for another. During the three weeks before the child's birthday everything the child said was recorded. The findings indicated that the second child made her first vocal sound during the eighth week. The sound was a long ā. Almost immediately the first consonant was prefixed to this, resulting in "ba." Imitation occured during the seventh month. At 12 months the second child used nine words, the first child 10. At 36 months the first child had a vocabulary of 738 words including 399 nouns, 164 verbs, 75 adjectives, 52 adverbs, 21 pronouns, 13 prepositions, two conjunctions, and 12 interjections. This compared favorably with 405 words used at 29 months.

Beyer (1915) studied the vocabulary of a boy two years of age. A record was kept of all words spontaneously used during the twenty-third and twenty-fourth months. It was found that the boy had a vocabulary of 771 words, 21 percent of which were verbs.

In another study to determine the vocabulary of a

three year old boy, Beyer (1916) found the boy's total vocabulary was 2055. This same boy used for the previous study done when he was two years of age, showed a gain of 1297 words, including 141 proper names. Thirteen of the earlier words had dropped from use.

Bloch (1924) studied the beginning of the sentence in the language of a child. The sentences of three children were recorded as they were used. The children first used isolated words that the author called "one-word sentences." Frequently each child represented the verb with a gesture. This stage began at about 20 to 23 months. The next step was the use of "two-word sentences" which occurred at about the twenty-fifth month. At about the same month, the preponderance of nouns over verbs in the childrens' language was striking. Prepositions and conjunctions were used infrequently during the third year. The children frequently changed the order of words in sentences.

A more recent study of a child's language development (Fraser, Brown, & Bellugi, 1964) provided evidence that passive control-that is, comprehension-was more advanced than production of every linguistic contrast tested in the case of three year old subjects.

Menyuk (1964) used a generative model of grammar to describe and compare the language of children with deviant and normal speech. He attempted to obtain an adequate description of the deviant speech. Language was elicited in

various stimulus situations from ten children diagnosed as using functionally infantile speech. Using the criteria of age, sex, socio-economic status, and IQ, they were matched with ten normal speaking children from whom a language sample had previously been obtained in the same stimulus situations. Language was also obtained from one child over a 12-month period from two years no months to three years of age.

From the results obtained, (Menyuk, 1964) the term infantile seems to be a misnomer since at no age level did the grammatical production of a child with deviant speech match or closely match the grammatical production of a child with normal speech. The child with normal speech rapidly acquired increasingly complex rules for his generation over the two to three year period and exceeded even the oldest child with infantile speech at age three.

The children with the deviant speech, for the most part, repeated with omissions or just repeated the last words of sentences. The repetition of sentences by children with normal speech seemed dependent on the structure of the sentence, and for them non-repetition was not significantly correlated with sentence length.

The Relation of Language Development to Other Phases of Development

The view that certain emotional patterns expressed in communication are innate is supported by the Darwinian theory. Charles Darwin (Johannesson, 1952) suggested that the origin

of human speech was mouth-pantomime in which the speech organs involuntarily attempted to imitate body gestures. Darwin (Ruesch & Kees, 1956) also postulated that certain emotions are expressed by reflexes such as rage with gritting teeth or fright with recoiling. The Darwinian theory further suggested that emotions and body movements are inherently related.

Bateman (1916) studied the language status of three children 28 months of age of approximately the same mental age and general background. The spontaneous words were recorded during a two-week interval. The findings showed that the children varied in spontaneous interest in speech activity. All three children used the first word with definite meanings, at about the same time, approximately 10.5 months. Only single words were used by the children for a period from five to six months.

To establish a developmental schedule with approximate normative values for language development Gesell (1928) studied language development using 90 subjects in clinical examinations in a gudiance nursery. The children were from one to 30 months of age. Gesell made a total of 429 examinations. Each child was seen on an average of four times.

Gesell gave the following findings as behavior items for language: ...At twelve months the baby had a vocabulary of two words, carried out a simple verbal commission, and upon request placed a cube in or over a cup at command. At

15 months the child's vocabulary had increased to four words and the child used an expressive jargon. At 18 months the normal child said five or more words, used jargon conversationally, and pointed to the nose, eyes, and hair. At 21 months the child joined two words, named one picture, and repeated things said by others. At 24 months the child named three of five objects, indicated five objects on a card, and combined words. At 30 months the child named five pictures and indicated seven pictures (Gesell, 1928).

Watson (1925) tried to form a simple verbal habit in a very young infant. The child, aged six and one-half months, was given a bottle and allowed to nurse for a moment; then the bottle was taken away. When the child began to whimper and whine, the experimenter said "da!" and handed it back. The child, after a few times, said the sound "da! da!" and was immediately given the bottle. This was repeated five times. The findings indicated therefore, when the bottle was taken away, the child immediately said "da-da!"

Piaget (1926) tried to gain an insight into the mind of the child by studying his language. In Piaget's study there was a discussion of logic more than the psychology of the child's language and thought. The study was based on the language and conversations of various children between the ages of three and 11 years. The findings indicated the sentences of the children, as found in their spontaneous talk, could be classified into the following categories:

repetition, monologue, collective monologue, adopted information, criticisms, commands, questions and answers. According to Piaget the child's mind is composed of two levels: the lower is the plane of subjectivity, which is the most important during the early years, and the higher is a plane of objectivity and logical ideas, the plane of reality.

Day (1932) in an investigation to compare the development of language in twins with that of singletons of the same ages, sex, and socio-economic status, found that:

> "As compared to single children twins are retarded in language development, as measured by each of the methods of analysis used. That language retardation increases with age, within the age period covered (two-five years) and is most clearly shown in the comparison of the findings of mean length of response. Both in the analysis according to the structure and in the world analysis, twins show the greatest retardation in those phases which make the greatest change with age. A small difference in favor of the girls appears in all methods of analysis. These sex differences are not as great as in the case of singletons, due possibly to the operation of the social factor (Day, 1932, p. 180)."

Smith (1935) studied the development of the sentence and of factors influencing such development. In the investigation he analyzed 305 records of the conversation of 220 children ranging from 18 to 72 months in age. The most useful criteria of improvement in speech were found to be the average number of words per sentence and the errors per word. Improvement was shown in many ways as related to chronological age but mental age was a more important factor in improvement. Sex differences were very slight except at two years of age

when girls excelled boys. Association with adults tended to improve speech more than association with other children. Children of higher social classes were more precocious in language development than were those of less-favored classes. Sentence length was indicative of size of vocabulary.

Irwin and Chen (1946) investigated to determine the number of types of speech sounds appearing in infant vocalization during the first two and a half years of life, to indicate the nature of the development of speech sounds by means of a curve, and to derive its equation. Consideration of the differences in sex were also given. Irwin and Chen found that the differences between means of adjacent months were not statistically different and trends could be adequately shown with 15 points on the curve. It showed that the phonemic equipment of the child during the first two-month period (29-30 months) is able to produce 27 of the 35 sounds present in adult speech. The infant's mastery of the types of phonemes used in the English language proceeds in a curvilinear manner and at a changing rate. Greater progress was made during the first year of life then during the second and a half years. (Irwin & Chen, 1946).

Feifel (1950) conducted a study to clarify further and to extend knowledge concerning the successive stages in concept formation and developmental thinking in children. Feifel used a qualitative analysis of children's verbatim responses to the Form L vocabulary Test of the Revised

Stanford-Binet Scale. Significant differences were established between the qualitative responses given by the younger children as compared with those used by the older children. The younger children significantly more often employed the use and description, illustration, demonstration, inferior explanation, and repetition types of responses, whereas the older children significantly more often used the synonym and explanation type of response. Characteristic differences were found to exist in the thinking of younger children when compared with older children of similar background. Younger children perceived words as 'concrete' ideas and emphasized their isolated or particular aspects, whereas, older children stressed the abstract or 'class' features of the word meanings.

Rosenbaum (1967) investigated the effect of verbalization of correct responses and retention by performers and observers. In the study, verbalization of correct responses in a multiple-choice maze task was carried out by performers or observers, and retention was assessed, in order to study the effect on retention of the verbalization of correct responses during acquisition. The most provocative finding was that under the conditions of the experiment active verbalization appeared not to affect retention but the observation of verbalization facilitated retention. The conclusion was suggested by the absence of the difference between the active verbalizers and the non verbalizers.

Environmental Conditions

The association of language development with emotional adjustment and growth was given more attention theoretically than experimentally until around the 1930's. Since that time a number of contributions point to an emotional and functional explanation of most of the language disorder syndromes and indicate that these emotional distrubances are for the most part environmentally determined.

McCarthy (1930) studied 140 children (20 at each six months age level from 18 to 54 months) on the basis of sex and socio-economic status. McCarthy visited them and recorded 50 consecutive responses made by each child while he played with a group of toys presented to stimulate speech. These data were analyzed in four different ways; by the grammatical construction of the sentence; by mean length of response; by the Piaget functional analysis;and a word analysis of parts of speech. The results indicated the developmental changes with age in agreement with other studies, as well as sex differences in favor of the girls. Differences in favor of the upper occupational groups were indicated also in each method analysed.

Fisher (1934) did an observational study of a group of preschool children during a period of what she called "sentence development." It was found that during the preschool years a child gave a vivid picture of himself through his language, and that his spoken language gave fundamental

cues to his personality. Through language he displayed his egotistical interest in himself and his "doings," his interest in the things about him, his emerging interests in his playmates and adults, and his interest in telling those who listened and those who did not, what he liked, did and felt.

McCarthy (1953) discussed what she termed an "organismic theory." She suggested that the emotional tone of the mother-child relationship affected the adequate establishment of such vital processes as breathing, feeding and vocalization.

Noel (1953) designed a study to measure the relationship between the language usage of the child and the usage of the parents. Noel concluded that the language usage which the child in the elementary grades heard his parents use, to a very large degree, determined the quality of language the child used. The teacher can, by constant practice on certain types of language, help the child eliminate some of his errors in the usages. The parents should could cooperate with the schools in seeing that the children hear and practice correct English in the home if much improvement is to be made in the quality of language used by their children.

Frank in speaking of tactile communication reported:

> "As a theoretical basis for this exposition, it is assumed that there is a series of communicative processes, of recognition and response to signal, to signs and to symbols, initially received through the various sensory processes.... The infant as an organism, with the wisdom of the body and its

> inherited neuro-muscular, sensory, and physiological functional capacities, arrives with a repertory of signal recognition. Frank suggests that the infant later learn to recognize various signals and signs as symbols which are defined by others, and later to symbol which indicate still more complex meanings (Frank, 1957, p. 212)."

Spence (1967) studied the performance of lower-and middle-class preschool children on a discrimination task compared under three reinforcement combinations (Reward, Punishment, Reward-Punishment) and within each of these, verbal reinforcers ("Right" and "Wrong") and non-verbal reinforcers (Candy and a Sound). In confirmation of the previous study of school-age children, the Candy-Reward subjects of both socio-economic groups were inferior to subjects given Punishment or Reward-Punishment combinations. The subjects rewarded by "Right," particularly lower-class subjects, were also inferior in performance, apparently due to inability to understand the reinforcement procedures.

Messer (1967) studied the implicit phonology in children. His subjects were 20 nursery school children ranging in age from three years one month to four years five months. Eleven were girls and nine were boys.

The children were presented with pairs of words, one of each pair was a non-English word which was possible in English according to the sequence constraints of the same formula. The subjects were asked to say which one of the pair sounded more like a word. They discriminated by choosing more "possible" words than "impossible" words, and

mispronounced the latter more often than the former. Substitutions of phonemes in cases of the mispronunciations were minimally distant from the original in terms of the number of distinctive feature changes. The evidence favored the proposition that the child has internalized the implicit syntax of phonemes and that a perceptual disposition had been achieved which led him to mispronounce the "impossible" words.

Special Problems in Language Development

In 1918 Nice investigated cases of delayed speech with special reference to "handedness." From this study criteria for normal speech development were set up: (1) the first word by 15 months; (2) a vocabulary of 200 words at two years of age, with the beginning of the use of sentences; and (3) at three years of age a vocabulary of 600 words representing all the parts of speech.

Irwin (1947) studied the vocalization of consonant sounds during the period of infancy. The analysis was in terms of the percent for each sound of the total consonant utterance at each of fifteen two month age levels. Consonant sounds were classified according to place of articulation into the following groups; (1) labial and labio-dentals, (2) lingua-dentals, (3) post-dentals, (4) velars, and (5) glottals. Profiles and curves were presented to illustrate the infant's progress in the mastery of these sounds. Velars

and glottals constituted about 98 percent of the consonantal sounds during the first months of life. The remaining groups at this time were negligible. At the end of the two and one half years velars remained unchanged, glottals were reduced from 87 percent to eight percent, and the labials increased to 25 percent, post-dentals to 53 percent, and lingua-dentals remained negligible. The profile for the 15 age levels (28-29 months) approximated that for adults but was not quite idential with it (Irwin, 1947).

In a follow-up study Irwin (1947) did an analysis of the vocalization by infants of consonant sounds, classified according to the manner of articulation. These classes were (1) nasal, (2) plosive, (3) semi-vowel, (4) fricative, and (5) glide consonants. Profiles and curves were used to illustrate trends in the infant's use of these sounds. Irwin found that the percent of nasal sounds made definite increase during the period of infancy. The proportion of semi-vowels and glides were negligible at first and showed a slight increase during the two and one half year period. However, they continued to remain less frequent than plosives and fricatives in the speech of infants. During the last year and one half, fricatives showed a progressive decrement, while plosives remained the most frequently used consonant group.

Miller and Ervin (1964) conducted a longitudinal study of 25 children and then a more intensive text collection from

a subgroup of five. The standardized tests collected from the larger group consisted of three tests; a plural test, a pronoun test, and two forms of a discourse agreement test. The children in the smaller sample were older than the other children in the group (Miller & Ervin, 1964).

Texts for four of the children were collected, beginning when the children were about two and one half years old. a fifth child was added when she was a year and nine months old. Text collection was scheduled to continue for two years. The standardized tests collected from the larger groups consisted of three tests; a plural test, a pronoun test, and two forms of a discourse agreement test.

Miller and Ervin (1964) concluded that the plural contrast followed a simple pattern in most children. The pattern varied from non-contrast to acquisition of particular instances of contrast, to generalization several months after acquisition of particular instances, and finally, to differentiation or irregular forms. In addition to inflectional suffixes, certain derivational suffixes were used to mark classes. However, the suffixes were used productively by only one child.

Cazden (1968) reported the acquisition of five nouns and verb inflections by three subjects of a five-year study of language acquisition. All analyses were based on tape recordings of spontaneous parent-child conversation made biweekly in each child's home.

Criteria were established for asserting that inflections were required in particular utterances, and the proportion of supplied utterances to ommitted inflections were charted. Plurals appeared before possessives, and each appeared first in particular linguistic contexts. Present possessives appeared before past and before present indicatives. When rate of acquisition was compared across the three children, different results were obtained if chronological age or mean length of utterance was held constant.

Summary

It is evident that although origins have been studied extensively, research was centered first on such aspects as grammatical form, sentence structure and length, and frequency of occurrence of various parts of speech. Later investigators attempted to relate language development to the purpose and needs of the child. More recently there has been concern with the relationship of the child's emotions to the emergence and growth of language. Though, at the present time, this approach has been the subject more of speculation than of rigorous research, it is thought to have some important implications for assisting the child who has not developed language patterns as a means of communication.

The present study is a comparative study of the means of communication (comprehensible verbalizations, non-comprehensible vocalizations, and non-vocal means of commu-

nication) toddlers used at home and in the group setting of the nursery school.

CHAPTER III

PROCEDURES

The main purpose of the study was to determine, through observation, if there was a difference in communication that toddlers used at home as compared with that which they used in the play-group situation. A second purpose was to determine if there was a difference in communication with respect to such factors as the age and sex of the toddler. A third purpose was to examine the communication used by the toddlers according to the number of children in the home and the ordinal position of the child being studied. The study was conducted in the Nursery School of the School of Home Economics at the University of North Carolina at Greensboro, during the spring semester of 1969.

Selecting Subjects

20 toddlers ranging in age from thirteen months through thirty months were used as subjects in the study. The 20 children were enrolled in the toddler program during the spring semester of the school year 1968-69. The toddler-group was a part of the Nursery School program in the School of Home Economics of the University of North Carolina at Greensboro. Ten of the toddlers were boys and ten were girls. The toddler-group enrollment was comprised of children from

the upper middle and upper socio-economic status. Children were selected for the Nursery School program in the order in which their applications were received.

Preliminary Observations

Before the study began, preliminary observations were made of the toddlers in the play-group situation. The investigator observed and recorded the language used by eight toddlers in eight fifteen-minute periods. The preliminary observations were made in order to gain an insight into the observation procedures which would best suit the purpose of the study.

After preliminary observations were made it was decided to observe three types of communication used by toddlers in their homes and in the toddler-group situation, rather than to observe only the language that the toddlers used. The means of communication were classified according to the following types: comprehensible verbalizations, non-comprehensible vocalizations and non-vocal means of communication.

Procedures

Observations were recorded of the means of communication used by the toddlers in their homes and in the toddler play-group in the Nursery School. Each child was observed by investigator for three thirty-minute periods in his home and for six fifteen-minute periods in the play-group situation.

The order of observation was randomized. The group of toddlers was alphabetized and numbered from one through 20. The investigator used a table of random numbers to assign a number to each child indicating the order within the one-hour observation period in which he was to be observed in the play-group situation. The order in which each child was observed in the home was also selected by the same method of randomization described above. Some changes had to be made for the convenience of the family to be visited.

Collecting Data

The means of communication that the toddlers used were recorded on an observation schedule (see Appendix A). The means of communication the toddlers used while being observed were then classified according to the following types of communications: comprehensible verbalizations, non-comprehensible vocalizations and non-vocal communication. The non-comprehensible vocal means included audible sounds other than understandable language. They were cries, yells, babbling, sobs, and squeals. Non-vocal communication included physical ways of making wants known. These types were kicking, smiling, laughing, pushing, hitting and gestures.

CHAPTER IV

FINDINGS

The main purpose of the study was to determine, through observation, if there was a difference in communication that toddlers used at home as compared with that which they used in the play-group situation. A second purpose was to determine if there was a difference in communication with respect to such factors as the age and sex of the toddler. A third purpose was to examine the communication used by the toddlers according to the number of children in the home and the ordinal position of the child being studied. The study was conducted in the Nursery School of the School of Home Economics at the University of North Carolina at Greensboro, during the spring semester of 1969.

Analysis of the Data

Each set of scores (comprehensible, non-comprehensible and non-vocal) was analysed by employing an analysis of variance. The design (Lindquist, 1953) was what Lindquist refered to as a "type III" analysis. With this type of analysis it was possible to see if the means of communication differed as a function of age (the toddlers from 13-19 months were compared to those 20-30 months), of sex, and of situation. It was also possible to see if the means of communication

were more complexly influenced by interactions of these factors. The level of confidence accepted was .05. When the analysis of variance indicated a significant difference or interaction, the means were inspected to learn the direction. No t-test was used.

Comprehensible Verbal Communication

A summary of the analysis of variance for the different words spoken by each child is presented in Table 1. The analysis was made to determine the main effects, age, and sex, and the interaction. There was no significant difference in vocabulary between boys and girls. There was no significant interaction between age and sex. A significant difference in the number of different words spoken at the .05 level was found between the younger and older toddlers. By inspection of the means, it was found that the older toddlers used a higher number of different words than did the younger toddlers (see Table 2).

Table 1
Analysis of Variance of Different Comprehensible Words by Age and Sex

Source	Sum of Squares	df	Mean Square	F ratio	Sig.
Age	87,985.40	1	87,985.40	28.72	.05
Sex	4536.40	1	4,536.90	1.48	
A X S	1,487.40	1	1,487.40	1.00	
Error I	49,023.40	16	3063.96		

Table 2

Mean Scores of Different Comprehensible Words by Age

Age	
Younger, 13-19 Months	Older, 20-30 Months
15.8	109.6

The summary of the analysis of variance for the different words used with respect to situation, age, and sex is shown in Table 3. The difference in the number of words spoken in the situation (home and school) was significant. It was found that the interaction between age and situation was significant. It was also found that the interaction between sex and situation was significant. There was also a significant interaction among age, sex and situation.

Table 3

Analysis of Variance of Different Comprehensible Words by Situation, Age and Sex

Source	Sum of Squares	df	Mean Square	F ratio	Sig.
Situation	24,108.10	1	24,108.10	19.35	.05
Age X Situation	8642.60	1	8642.60	6.94	.05
Sex X Situation	5616.90	1	5616.90	4.51	.05
A X S X S	6657.40	1	6657.40	5.34	.05
Error II	19,931.00	16	1245.69		

The total number of different words used by all toddlers at home was significantly higher than the number of words they used at school as seen when the mean scores in Table 4 were inspected. There was, however, a significant interaction between age and situation. Table 5 indicates that the older toddlers showed a much greater change from school to home than did the younger toddlers.

Table 4

Mean Scores of Different Comprehensible Words by Situation

Situation	
Home	School
87.2	38.1

Table 5

Mean Scores of Different Comprehensible Words by Age and Situation

		Age	
		Younger 13-19	Older 20-30
Situation	Home	25.6	148.8
	School	5.9	70.3

The mean number of different comprehensible words used by boys and girls at home and at school is given in Table 6. It can be seen that girls used fewer words at school than

they did at home, whereas the difference for boys was relatively small.

Table 6

Mean Scores of Different Comprehensible Words by Sex and Situation

Situation	Sex	
	Boys	Girls
Home	86.0	88.4
School	60.6	15.6

When the interaction among age, sex, and situation was analyzed, there was a significant interaction. Table 7 indicates that the older girls used more words at home than at school and more words than the younger girls at either school or home. The older boys also used more words than the younger boys at either school or home.

Table 7

Mean Scores of Different Comprehensible Words by Situation, Age and Sex

Situation		Age			
		Younger 13-19		Older 20-30	
		Boys	Girls	Boys	Girls
	Home	31.2	20.0	140.8	156.8
	School	9.4	2.4	111.8	28.8

Vocabulary

The largest number of different words was spoken by the older boys. This total was 587 (see Appendix I). The older girls however, spoke a total of 505 different words (see Appendix J). The younger boys used 120 different words, (see Appendix G), whereas younger girls spoke even fewer-67 different words (see Appendix H). The greatest number of different words spoken by any one boy was 320. This boy was one of the older toddlers. The highest number of different words spoken by a girl was 322. She also was one of the older toddlers in the group.

Total Number of Times Each Toddler Used Comprehensible Vocalizations

Although there was no significant difference in the different number of words spoken by boys and girls, the number of times boys used these words was greater than the number of times words were spoken by girls. It can be concluded that boys and girls did not use different words, but the boys talked more than the girls did both at home and at school (see Appendix C).

Non-Comprehensible Vocal Communication

The total number of non-comprehensible means of communication each child used in the home and in the toddler play-group situation is presented in Table 8. The non-comprehensible means included audible sounds other than understandable language. They were cries, yells, sobs, babblings and squeals. The comparison was made for age and sex. There was not a significant difference between boys and girls. There was not a significant interaction between age and sex. A significant difference at the .05 level in the number of non-comprehensible means of communication used was found between the younger and older toddlers.

Table 8

Analysis of Varinace of Different Non-Comprehensible Vocalizations by Age and Sex

Source	Sum of Squares	df	Mean Square	F ratio	Sig.
Age	10.0	1	10.0	13.7931	.05
Sex	0.9	1	0.9	1.2413	
A X S	0.9	1	0.9	1.2413	
Error I	11.6	16	0.7250		

It was found that the younger toddlers used a higher number of non-comprehensible means of communication than did the older toddlers (see Table 9).

Table 9

Mean Scores of Non-Comprehensible Vocalizations by Age

Age	
Younger 13-19 Months	Older 20-30 Months
2.70	1.70

The summary of the analysis of variance for the number of non-comprehensible means of communication used with respect to situation, age and sex is shown in Table 10. It was found that there was no significant interaction between age and situation. There was no significant interaction between sex and situation. There was also no significant interaction among age, sex and situation. A significant difference at the .05 level in the number of non-comprehensible means of communication used was found between the home and school situations. Toddlers used a higher number of non-comprehensible means of communication at home than in the toddler-group situation (see Table 11).

Table 10

Analysis of Variance of Different Non-Comprehensible Vocalizations by Situation, Age and Sex

Source	Sum of Squares	df	Mean Square	F ratio	Sig.
Situation	10.0	1	10.0	12.5000	.05
Age X Sit.	0.4	1	0.4	0.5	
Sex X Sit.	0.9	1	0.9	1.1250	
A X S X S	0.9	1	0.9	1.1250	
Error II	12.8	16	0.8000		

Table 11

Mean Scores of Non-Comprehensible Vocalizations by Situation

Situation	
Home	School
2.70	1.70

In summary the analysis of non-comprehensible means of communication showed that the older toddlers used fewer means of non-comprehensible speech than did the younger toddlers. It was also found that toddlers used less non-comprehensible speech at school than at home.

Total Number of Times Each Toddler Used Non-Comprehensible Vocalizations

The finding that younger toddlers used more different non-comprehensible vocalizations is in keeping with the finding that younger toddlers also used a larger total number of non-comprehensible vocalizations (see Appendix C). The finding that toddlers used more different non-comprehensible vocalizations at home than in the toddler-group situation was similar to the finding that toddlers used a larger total number of non-comprehensible vocalizations (see Appendix C). Babbling was used more frequently than any other non-comprehensible means of communication.

Non-Vocal Means of Communication

In Table 12 the non-vocal communication used by each child is presented, with difference by age and sex. A comparison between age and sex was made. Non-vocal communication included physical ways of making wants known. These were kicking, smiling, laughing, pushing, hitting and gestures.

Table 12

Analysis of Variance of Non-Vocal Communication by Age and Sex

Source	Sum of Squares	df	Mean Square	F ratio	Sig.
Age	9.0250	1	9.0250	10.1690	.05
Sex	3.0250	1	3.0250	3.4084	
A X S	1.2250	1	1.2250	1.3802	
Error I	14.2000	16	0.8875		

There was no significant difference in non-vocal means of communication between boys and girls. There was no significant interaction between age and sex. A significant difference was found at the .05 level in the number of non-vocal means of communication used between younger and older toddlers. It was found that the younger toddlers used a higher number of non-vocal means of communication than did the older toddlers (see Table 13).

Table 13

Mean Scores of Non-Vocal Communication by Age

Age	
Younger 13-19 Months	Older 20-30 Months
5.0	4.0

The summary of the analysis of variance for non-vocal means of communication with respect to situation, age, and sex is shown in Table 14. There was a significant interaction between age and situation. There was no significant interaction between sex and situation. There was no significant interaction among age, sex, and situation. The difference in numbers of non-vocal means of communication used in the situation (home and school) was significant at the .05 level.

Table 15 shows that the toddlers used more non-vocal communication at home than at school.

Table 14

Analysis of Variance of Non-Vocal Communication by Situation, Age, and Sex

Source	Sum of Squares	df	Mean Square	F ratio	Sig.
Situation	13.2250	1	13.2250	11.1368	.05
Age X Sit.	9.0250	1	9.0250	7.6000	.05
Sex X Sit.	4.2250	1	4.2250	3.5578	
A X S X S	3.0250	1	3.0250	2.5473	
Error II	19.0000	16	1.1875		

Table 15

Mean Scores of Non-Vocal Means of Communication by Situation

Situation	
Home	School
5.0	3.9

The total number of non-vocal means of communication used by younger toddlers at home was higher than the number of non-vocal means of communication used at school as can be seen by inspecting the mean scores in Table 16. It was found that older toddlers showed very little change from

home to school. At school they used the same amount of non-vocal communication as the younger toddlers, but at home they did not show the increase shown by the younger toddlers.

Table 16

Mean Scores of Different Non-Vocal Communication by Age and Situation

		Age	
		Younger 13-19 Mos.	Older 20-30 Mos.
Situation	Home	6.0	4.1
	School	3.9	3.9

In summary, the analysis of the non-vocal means of communication showed that older toddlers used less non-vocal means of communication than did the younger toddlers. Less non-vocal means of communication was used at the toddler-group situation than at home, but the difference between home and school was accounted for by the younger toddlers.

Total Number of Times Each Toddler Used Non-Vocal Communication

The finding that older toddlers used fewer different means of non-vocal communication is in keeping with the finding that older toddlers also used smaller total number of means of non-vocal communication (see Appendix D).

The finding that toddlers used more different means

of non-vocal communication at home than in the toddler-group situation is similar to the finding that toddlers used a larger total number of non-vocal communication at home (see Appendix D). Smiling and gestures were the non-vocal means of communication used most frequently.

Discussion of Means of Communication with Respect to Number of Children in the Family and Ordinal Position

The number of times all means of communication were used was totaled and was compared with the number of children in the family and the ordinal position of the toddlers. The average of the total number of different times all means of communication was used was figured for those toddlers who were: only children; in a family of two children; the first child; or the last child in the family. No statistical test was used to analyze these data.

The total number of different times all means of communication were used by each child and the number of children in the family are presented in Appendix E. It was found in examining the different times all means of communication each toddler used with respect to number of children in the family that there appeared to be little observable difference in the average number of times communication was used by toddlers in families with only children and by toddlers in families with two children. However, there appeared to be a great difference in the one family studied

with twins and an older sibling.

The total number of different times all means of communication were used by each toddler with respect to ordinal position is presented in Appendix F. It was found by examining the average number of times all means of communication each toddler used and his ordinal position in the family that there was little observable difference in the different number of times all means of communication are used between toddlers who are the first child in the family and toddlers who are the last child in the family.

There was a great deal of variability within the group of toddlers who were the last child in the family and the group of toddlers who were the first child in the family with respect to total means of communication. There was also a variability within the group of toddlers who were the only child and the group of toddlers where there was a number of children in the family. This indicates that there were intervening variables. Prescott reported that:

> "The process of assimilating experience (gaining meanings) is speeded up tremendously when the child communicates with other persons who answer his questions, help him to name things accurately, and show him how to use language...(Prescott, 1957, p.388)."

In those families where there was much verbal interaction between the parents and the toddlers, the toddler's vocabulary and total number of times he spoke was higher than in families in which there was little verbal interaction

between the parents and the toddler.

Null Hypotheses

There were 21 major hypotheses in this study:

Hypothesis 1. The size of the vocabulary toddlers use at home will not differ from the size they use at school. Since toddlers used all means of communication significantly more at home than at school, hypothesis 1 was rejected.

Hypothesis 2. The number of different non-comprehensible vocalizations toddlers use at home will not differ from the number they use at school. Since toddlers used significantly more non-comprehensible vocalizations at school, hypothesis 2 was rejected.

Hypothesis 3. The number of non-vocal communications toddlers use at home will not differ from the number they use at school. Hypothesis 3 was rejected since toddlers used significantly more non-vocal means of communication at home.

Hypothesis 4. The size of the vocabulary toddler girls use will not differ from the size toddler boys use. There was no significant difference found in the size of the vocabulary that a toddler girl and boy use, therefore, hypothesis 4 was supported.

Hypothesis 5. The number of different non-comprehensible vocalizations toddler girls use will not differ from the number toddler boys use. Boys and girls did not significantly differ in use of non-comprehensible means of

communication, therefore hypothesis 5 was supported.

Hypothesis 6. The number of different non-vocal communications toddler girls use will not differ from the number toddler boys use. Boys and girls did not differ significantly in the number of different number of non-vocal means of communication, therefore hypothesis 6 was supported.

Hypothesis 7. There will be no interaction between sex and situation with respect to size of vocabulary. Since there was a significant interaction between sex and situation with respect to size of vocabulary, hypothesis 7 was rejected.

Hypothesis 8. There will be no interaction between sex and situation with respect to non-comprehensible vocalizations. Since there was no interaction between boys and girls and situation with respect to non-comprehensible means of communication, hypothesis 8 was supported.

Hypothesis 9. There will be no interaction between sex and situation with respect to non-vocal communications. Since there was no interaction between boys and girls and situation with respect to non-vocal means of communication, hypothesis 9 was supported.

Hypothesis 10. The size of the vocabulary younger toddlers use will not differ from the size older toddlers use. Since the size of the vocabulary of younger toddlers was significantly smaller than the vocabulary of older toddlers hypothesis 10 was rejected.

Hypothesis 11. The number of non-comprehensible

vocalizations younger toddlers use will not differ from the number older toddlers use. Since younger toddlers used significantly more non-comprehensible means of communication than did older toddlers, hypothesis 11 was rejected.

Hypothesis 12. The number of non-vocal communications younger toddlers use will not differ from the number older toddlers use. Since younger toddlers used significantly more non-vocal means of communication than did older toddlers, hypothesis 12 was rejected.

Hypothesis 13. There will be no interaction between age and situation with respect to size of vocabulary. Since there was some significant interaction between age and situation hypothesis 13 was rejected.

Hypothesis 14. There will be no interaction between age and situation with respect to non-comprehensible vocalizations. There was no significant interaction between age and sex with respect to non-comprehensible means of communication, therefore hypothesis 14 was supported.

Hypothesis 15. There will be no interaction between age and situation with respect to non-vocal communications. There was a significant interaction between age and situation with respect to non-vocal means of communication, therefore hypothesis 15 was rejected.

Hypothesis 16. There will be no interaction between age and sex with respect to size of vocabulary. Since there was no significant interaction between age and sex with

respect to size of vocabulary hypothesis 16 was supported.

Hypothesis 17. There will be no interaction between age and sex with respect to non-comprehensible vocalizations. Since there was no significant interaction between age and sex with respect to non-comprehensible means of communication, hypothesis 17 was supported.

Hypothesis 18. There will be no interaction between age and sex with respect to non-vocal communication. Since there was no significant interaction between age and sex with respect to non-vocal means of communication hypothesis 18 was supported.

Hypothesis 19. There will be no interaction among age, sex, and situation with respect to size of vocabulary. Since there was a significant interaction among age, sex, and situation with respect to size of vocabulary, hypothesis 19 was rejected.

Hypothesis 20. There will be no interaction among age, sex, and situation with respect to non-comprehensible vocalizations. Since there was no significant interaction among age, sex, and situation with respect to non-comprehensible means of communication, hypothesis 20 was supported.

Hypothesis 21. There will be no interaction among age, sex, and situation with respect to non-vocal communications. Since there was no significant interaction among age, sex, and situation with respect to non-vocal means of communication, hypothesis 21 was supported.

Discussion of Communication with Respect to Age, Sex and Situation

It is generally believed that children use the same size vocabulary at home and away from home in a group situation. Previous studies have shown that this is true of nursery school children, but the findings of this investigation showed that in the particular group studied, the toddlers used a greater number of different words at home. Studies of nursery school children have indicated that the size of the girls' vocabularies is the same as the boys' vocabularies. The present study on toddlers also indicated that there is no difference between the vocabularies of boys and girls. Older nursery school children have been found to use a larger vocabulary. From the present investigation it was found that older toddlers have a larger vocabulary. Studies of nursery school children have shown that younger children used more non-vocal communication than did older children. From the present study it was found that younger toddlers used more non-vocal communication than did the older toddlers at home but that there was no difference at school.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

It is generally believed, that children use the same size vocabulary at home and away from home in a group situation; that the size of the girls' vocabularies is the same as the boys' vocabularies; that the older children more frequently use language as a tool of making their wants known than do the younger children; and that younger children will use more means of non-vocal communication than will older children.

Studies of preschool children have indicated that these assumptions are valid. However, no study has been made to validate them for toddler-age children. The main purpose of the study was to determine, through observation, the difference in communication that toddlers used at home as compared with that which they used in the play-group situation. A second purpose was to determine the difference in communication with respect to such factors as the age and sex of the toddler. A third purpose was to examine the communication used by the toddlers according to the number of children in the home and the ordinal position of the child being studied. The study was conducted in the Nursery School of the School

of Home Economics at the University of North Carolina at Greensboro, during the spring semester of 1969.

Twenty toddlers ranging in age from thirteen months through thirty months of age were subjects used in the study. Ten of the toddlers were boys and ten were girls.

Observations were recorded of the means of communication used by the toddlers in their homes and in the toddler play-group. Each toddler was observed by the investigator for three thirty-minute periods in his home and six fifteen-minute periods in the play-group situation. The order of observation was randomized.

The means of communication the toddler used were recorded on an observation schedule (Appendix A). The means of communication the toddlers used while being observed were then classified according to the following types of communications: comprehensible, non-comprehensible and non-vocal. The comprehensible means included all the verbalizations the child used that could be understood. Non-comprehensible vocalizations included audible sounds other than understandable language. These were cries, yells, babblings, sobs, and squeals. Non-vocal communication included physical ways of making wants known. The non-vocal means used were kicking, smiling, laughing, pushing, hitting and gestures.

The data were analyzed by employing an analysis of variance. The design (Lindquist, 1953,pp. 220-243) was what Lindquist refered to as a "type III" analysis.

Conclusions

As a result of the limited sample, the procedures, and the statistical analysis used in this study, the following conclusions were reached: The total number of communications used by toddlers at home was significantly higher than the number of communications they used at school. There was no difference in the communication used by boys and by girls. The younger toddlers used a higher number of non-comprehensible vocalizations and non-vocal communication than did the older toddlers; however the older toddlers used more comprehensible verbalizations. It was found in examing the total means of communication each toddler used and the number of children in the family that; there appeared to be little observable difference in families with only children and families with two or more children. However, there appeared to be a great difference in the total means of communication in the one family with twins and an older sibling. It was found by examining the total means of communication that each toddler used and his ordinal position in the family that; there is little observable difference in the total number of means of communication used by toddlers who are the first child in the family and toddlers who are the last child in the family.

Recommendations

After having completed this study, the investigator believes that relevant studies seem justified. Some of these would be:

A comparative study of the parental speech in relation to the amount and kind of speech the toddler uses.

A study investigating the importance of stimulating experiences and activities in order to help develop speech in young toddlers.

An investigation comparing the means of communication of toddlers from a different socio-economic status, and racial backgrounds.

An investigation to determine if speech in a toddler is voluntary, stimulated, or imitated.

An investigation to compare the similarities and differences of the communication used by institutionalized toddlers and toddlers living in a normal home situation.

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APPENDIX A

Observation Schedule

NAME OF CHILD_____DATE_____

BIRTHDATE_____

SITUATION_____

COMMUNICATION CHILD USED

TIME	COMPREHENSIBLE	NON-COMPREHENSIBLE	NON-VOCAL

APPENDIX B

The Total Number of Times Each Toddler Used Comprehensible Verbalizations

Age	Boys Ss	Home Total	School Total	Total	Girls Ss	Home Total	School Total	Total
13-19	1	67	0	67	11	19	1	20
	2	65	6	71	12	20	3	23
	3	20	11	31	13	34	15	49
	4	156	8	164	14	70	2	72
	5	416	157	573	15	144	1	145
Total		724	182	906		287	22	309
	6	251	195	446	16	481	167	648
	7	692	101	793	17	122	1	123
	8	673	547	1220	18	944	173	1117
	9	460	889	1349	19	569	6	575
	10	969	760	1729	20	649	23	672
Total		3045	2492	5537		2765	370	3135

APPENDIX C

The Total Number of Times Each Toddler Used Non-Comprehensible Vocalizations

Age	Boys Ss	Home Total	School Total	Total	Girls Ss	Home Total	School Total	Total
13-19	1	467	57	524	11	327	137	464
	2	347	96	443	12	576	214	790
	3	524	543	785	13	506	111	617
	4	720	130	850	14	349	22	317
	5	334	300	634	15	419	143	562
Total		2410	826	3236		2177	627	2804
20-30	6	178	133	311	16	170	22	192
	7	323	45	368	17	282	43	325
	8	248	47	295	18	383	66	449
	9	173	119	292	19	193	0	193
	10	166	84	250	20	121	17	138
Total		1088	428	1516		1149	148	1297

APPENDIX D

The Total Number of Times Each Toddler Used Non-Vocal Communication

Age	Boys Ss	Boys Home Total	Boys School Total	Boys Total	Girls Ss	Girls Home Total	Girls School Total	Girls Total
13-19	1	174	83	267	11	50	39	89
	2	102	32	134	12	105	94	199
	3	76	80	156	13	93	35	128
	4	73	27	100	14	118	52	170
	5	81	63	144	15	83	13	96
Total		506	285	791		449	233	682
20-30	6	74	48	122	16	68	37	105
	7	29	8	37	17	120	50	170
	8	26	64	90	18	36	19	55
	9	40	71	111	19	70	26	96
	10	31	14	45	20	85	25	110
Total		200	205	405		379	157	536

APPENDIX E

Communication and Number of Children in Family

		One Child	
Subject	2.	642	Communication
	16.	945	
	12.	1012	
	18.	1621	
		Two Children	
	11.	574	
	17.	618	
	3.	672	
	13.	794	
	1.	848	
	19.	864	
	6.	899	
	20.	920	
	4.	1097	
	7.	1197	
	5.	1367	
	8.	1605	
	9.	1742	
	10.	2024	
		Twins With an Older Sibling	
	14.	642	
	15.	907	

APPENDIX F

Communication and Ordinal Position

Subject	Communication
First or Only Child in the Family	
2.	642
19.	864
6.	899
16.	945
12.	1012
18.	1621
9.	1742
Last Child in the Family	
11.	574
14.	615
17.	618
3.	672
13.	794
1.	848
15.	907
20.	920
4.	1097
7.	1197
5.	1367
8.	1605
10.	2024

Appendix G

Vocabulary

Age 13-19 — Younger Boys — Total Words: 120

A
A
all
arm

B
bone
baby
ball
bear
boy
Bob
bell
back
basket
box
bye
bottle
busy

C
car
corn
clock
coat
cat
coke
cracker
catch
cook
close
chain
call

D
dog
Dad
doll
dirty
Daddy
Daisy
down
dough
doors

E
eye

F
fell

G
get
go
gone
girl
give
good
got

H
hot
ha
horse
hurt
has
hat
her
here
hold
hand

I
I
is
ice
it
if
in

J
Jeff
jingle

K
key
keys
kitty

L
look
lock

M
man
my
Mommie
Mama
mail
mine
move
more
me
mouse

N
Nanny
no
now
need

O
other
ouch
on
oh
out
open
okay

P
puppy
pencil
paper
play
pick
pop
put
pocket
please

Q
–

R
right
read

S
Sam
see
sit
stop
spoon

T
the
this
there
that
turn
tea
to

U
uh oh!
up

V
–

W
who
where
want
what

X
–

Y
you

Z
–

APPENDIX H

Vocabulary

Age 13-19	Younger Girls	Total Words: 67

A
A

B
book
Beth
bye
banana
ball

C
cheese
cookie
coca-cola
chicken
chain

D
Dad
down
duck
door

E
eat

F
for

G
get
gone
going
go
good
got

H
hello
hi
hot
here
hung

I
I
is

J
juice

K
keys

L
look

M
Mama
medicine
more

N
no

O
one
off
open
outdoors
oh

P
potato
pocket
paper

Q
-

R
-

S
-

see
shoe
school
some
spoon
supper

T
this
these
there
to
that
the
thank

U
uh oh
up

V
-

W
want
water
what
write

X
-

Y
you
yea
yes

Z
-

APPENDIX I

Vocabulary

Age 20-30 — Older Boys — Total Words: 587

A
A
all
another
apron
around
an
and
arm
about
at
am
airplane
are
again
airport
army
air
A & P
ain't
away
ache

B
bus
blue
brought
bat
bread
boy
butterfly
broke
be
broken
big
baby
boat
bottle
bell

bear
backward
bucket
bowl
book
building
build
by
brown
bye-bye
bush
both
bake
bunny
back
belt
boom
bird
bring
bounce
broom
Buda

C
cold
chair
car
coat
cooks
Canaday
can
come
cool
cookie
coke
cho-cho
cross
check
clown

climb
cake
Carla
cooked
chicken
close
cheese
came
cause
candle
coffee
cook
come
Cox
can't
climbing
comming
cartoon
circus
cantelope
catch
cigarette
chickmump
candles
candy
comes
coal
cup
cookies
closed
could
cream
cry

D
Daddy
dessert
dough
die

day
delicious
dog
down
done
do
did
David
drink
draw
doing
don't
does
didn't
dishes
dirty
dropped
deer
doggy
duck
Dino
drink
drums
ding
dollar
donkey
dirt

E
eat
end
elephant
eye
engine
ears
excuse
else
ever

F
feed
finished
furniture
find
fix
fell
fly
for
from
flag
fire
for
flour
floor
fish
Freedman
four
fine
fall
found
full
fireman
football
frog
foot
frisky
frito

G
go
gone
get
good
girl
got
going
give
giraffe

goes
gold
gun
grass
glue
gravy
gingerale
ginger

H

ha
he
hate
helicopter
him
have
hit
high
hello
here
hanger
happen
horse
his
hair
hurts
home
hands
here's
hold
hospital
help
heavy
hi
hear
huh
hang
had
hop
high
house
heart
hat
horse
helmet
ho
hammer
hooked
hole
hill
hot

I

I
in
is
it
I'll
if
it's
ice

J

juice
Johnson
Jack
Jill'm
jacket

K

keys
know
knee
keep
kids
keeps
knock
key

L

lady
look
little
like
left
last
ladder
lights
let
let's
lights
lay
lot
line
light
living
leg

M

Mama
Mommie
more
mail
my
Mrs.
mouth
man
meat
mirror
mash
move
Mom
marble
many
me
make
music
mark
Mr.
milk
mine
mess
Mary
marked
matches
myself
mother
marshmellow
Miller
Michael
monster

N

not
napkin
nut
no
need
new
nap
now
night
nose
next
nope
noise
name
nothing

O

off
oh
okay
Ora
outside
one
over
open
on
old
own
out
of
oven
other
orange

P

played
play
potatoes
punching
please
player
put
pencil
piegon
pretty
policeman
plastic
people
paint
push
plane
puzzles
pooch
poochie
pooh
plates
Peggy
pick
Pattie
pecker
picked
playing
paper
papa
puppy
pea
pour
phone
pants
pan
pill
pillow
picture
popeye
puzzle
pocket
pink
peddle
purple
pull
pencils
poles
pall
Poppins
pick
potato
possum

Q

quack

R

red
race
record
ring
rail
road
right
rocking
run
refrigeator
ride
rock
read
river
railing
real
raining
room
rope
raccon
running

S

some
see
spoon
sit
squirrel
show
saw
shake

something
sofa
seat
song
station
standing
school
screw
show
shut
sand
string
swing
shoe
stone
Stacy
start
spit
silver
she
sky
six
Spot
stay
slide
seal
side
study
stretch
should
share
smack
sailor
suit
says
sponge
stopping
skampy

T

that's
talk
those
things
thunder
this
to
that
table
the
they

they
thank
take
telephone
Tommy
toys
there
trying
times
truck
time
train
tractor
turn
think
them
today
turtle
trip
track
two
three
taste
throw
too
tell
throwing
trees
throwing
toy
tired
towel
trash
top
twist
T.V.
T.J.

U

use
up
used
untie
un huh
uh oh
under
ups

V

very
vaporize

W

we
whose
want
work
would
woke
what's
where
white
wheels
what
wanting
was
why
way
who's
who
wee-wee
wash
whee
wheel
works
worm
wish
well
whole
water
watch
wood
write
writhe
weed
wet
writing
wrong
wind
wall
wrench
went
wagon
window
washer
watching

X

-

Y

yea
you

your
you're
yellow
yours
yet

Z

zipper

APPENDIX J

Vocabulary

Age 20-30 — Older Girls — Total Words: 505

A
A
any
and
again
all
am
angel
animal
another
away
are
around
armour
asked
always
at
arm
Ann
allegiance
Alise
almost
airplane

B
book
back
bunny
bear
boom
bag
barking
big
boy
broken
bring
bonnies
bed
blow
bit
broke
bad
banana
be
bicycle
bark
black
bib
bus
bottle
bear
bath
bite
break
baby
Betsy
ball
burn
basketball
bye-bye
broken
bench
birthday
bird
boat
birds
bubble
babies
blue
bears
basket

C
close
call
calling
called
card
clock
coin
cup
cherries
clothe
cold
cotton
can
chair
closet
cracker
cookie
cho-cho
cooking
cat
can't
come
couldn't
cook
catch
chicken
company
Cox
closer
crying
cry
cake
clothes
candy
cookies
corn
combing
clean
chew
coke
crawl
clown
change
comb
chocolate

D
dough
down
dollars
dog
don't
dirty
do
does
duck
dishes
doll
different
Daddy
Donald
dogie
dress
diaper
dolly
did
dumpty

E
ear
ears
Evelyn
eyes
eat
enough

F
four
find
foot
floor
fix
fetch
first
flag
for
fell
finished
finger
fast
fifteen
falling
fellow
flip
follow
five
fire

G
get
got
grapes
green
goes
getup
go
good
going
Goofy
gingerale
goose
giraffe
girl
ginger
grocery
Grand-Mama
gum
God
Gi-Gi
gone
give

H
hello
hurt
here
humpty
house
ha
happen
hand
hold
her
hear
horse
hi
horn
head
hungry
him
hot
he
have
his
hot
how
hands
heavy
huh
hair
had
head
hug
hole
house
hold
hide
help

I
I
it
is
in
ironing
I'll
individual

J
juice
Jack
Jill
just
justice

K
know
king
keep
kittens
kitchen
knee
kitty
key
keys

L
lay
little
look
legs
like
let
lick
likes
Laura
lot
let's
lady
Lynne
looking

M
man
move
Mama
my
milk
money
meadow
Mommie
make
macaroni
maybe
me
mickey
mouse
matter
Mr.
mark
more
muckie
memow
market
melon
mouth
music
Matt
moving
many
Molly

N
no
Nanny
necklace
next
neck
now
nose
night
need
nail
name
noise
new
not
nation

O
on
one
oh
of
orange
okay
other
open
off
outside
out
over
ouch
owl
once

P
picture
push
pretty
paint
paper
piece
put
pot
please
please
phone
pineapple
place
pin
Patty
plant
pan
please
pull
puzzle
pour
pie
pieces
Papa
princess
pussy
park
play
pretty
peas
porch
puzzle
pictures
probably
pledge

Q
quack

R
ride
raining
record
ring
right
rough
rattle
rabbit
roll
rock
red
run
read

S
some
see
swing
say
saying
sing
sit
something
Suzanne
soup
scotch
sun
spatula
store
supper
she
stand
suitcase
step
still
skim
stay
shoes
spoon
stamp
squeeze
soap
stomach
spill
squirrel
string
snow
shelf
sorry
sleep
skating
slip
stick
smell

T
this
talk
tiger
that
these
T.V.
two
the
tall
table

try
truck
tail
tree
to
toy
these
train
tickle
top
tip
toes
turned
trying
time
towel
throw
turn
tractor
two
Teddy
thing
that's
three
they
taking
them
tape
thank
toys
tight
too
tipsy
time
Trixie
tuck
tumbles
talking
tear
Tannenbaum

U

uh oh
up
ups
un huh
under

V

-

W

want
what's
where
wagie
water
winners
wood
what
wait
why
we
want
wash
who
with
whole
wonder
was
washing
wee-wee
way
wipe
wet
when
white
wind
walk

X

-

Y

yellow
you
yea
yes

Z

-